Andrew Schechtman-Rook
rook166@gmail.com — (917)-836-4267

EDUCATION

Ph.D., Astronomy, University of Wisconsin-Madison — December 2013
MS, Astronomy, University of Wisconsin-Madison — June 2009
BS, Astronomy, Case Western Reserve University — May 2007

EXPERIENCE

Principal Data Scientist — 2014-Present
Capital One Labs

- Built and deployed an interactive course completion dashboard using Flask and dc.js to provide progress reports to individual students as well as company leadership.
- Implemented a novel approach to deliver internal technical trainings, providing over 5000 hours of classes with no instructors.
- Engineered a credit card payment simulator, allowing a product team to gain actionable insights without expensive pilots.

Data Science Fellow — 2014
The Data Incubator

- Trained a model on historical airline on-time arrival data to predict flight delay times.
- Designed a web interface to provide interactive itinerary input and visualizations to intuitively display model results.

Postdoctoral Research Associate — 2014
University of Wisconsin-Madison

- Improved agreement between numerical models and astronomical data by 20%, using vectorized numpy operations and specialized libraries to preserve run time.
- Authored a fast Voronoi Tessellation algorithm to adaptively bin images, preserving spatial resolution while maximizing signal in images with over one million pixels.

Independent NFL Analyst — 2013-Present
phdfootball.blogspot.com

- Developed a program to automatically remove camera motion from NFL game footage.
- Mined a play-by-play database containing over 500,000 records across dozens of tables for deep relationships between individual players as well as teams.
- Explained findings to a broad audience through both written posts and evocative figures.

Research Assistant — 2007-2013
University of Wisconsin-Madison

- Employed on-campus distributed computing resources to perform large-scale modeling in parallel, using over 20 years of computer time in 1 month.
- Assembled a hybrid C++/Python processing pipeline to process hundreds of high-resolution images with minimal user intervention, resulting in a 10x increase in analysis precision.
- Created a genetic algorithm in C++ to efficiently fit complex galaxy models to high-resolution images.
- Computed descriptive statistics about 200+ astronomical objects from raw survey data automatically via custom-built analysis software blending C++ and shell scripting programs.

SKILLS

Programming: Python, shell scripting, C++.
Databases and Web Design: Flask/Django, AWS, MySQL, Hive/Beeline.
Operating Systems: Linux, Mac OS X.
Data Analysis: Parallel and distributed computing; machine learning; image processing and machine vision; Monte Carlo; principal component analysis.